











TABLE 5 18 1 PROPERTIES OF WELDS TREATED AS LINES

Section $b = \text{width}; d = \text{depth}$	Section Modulus I_x/\bar{y}	Polar Moment of Inertia, I_p about Center of Gravity
1. 	$S = \frac{d^2}{6}$	$I_p = \frac{d^3}{12}$
2. 	$S = \frac{d^2}{3}$	$I_p = \frac{d(3b^2 + d^2)}{6}$
3. 	$S = bd$	$I_p = \frac{b(3d^2 + b^2)}{6}$
4. 	$\bar{y} = \frac{d^2}{2(b+d)}$ $\bar{x} = \frac{b^2}{2(b+d)}$	$S = \frac{4bd + d^2}{6}$ $I_p = \frac{(b+d)^3 - 6b^2d^2}{12(b+d)}$
5. 	$\bar{x} = \frac{b^2}{2b+d}$	$S = bd + \frac{d^2}{6}$ $I_p = \frac{8b^3 + 6bd^2 + d^3}{12} - \frac{b^4}{2b+d}$
6. 	$\bar{y} = \frac{d^2}{b+2d}$	$S = \frac{2bd + d^2}{3}$ $I_p = \frac{b^3 + 6b^2d + 8d^3}{12} - \frac{d^4}{2d+b}$
7. 		$S = bd + \frac{d^2}{3}$ $I_p = \frac{(b+d)^3}{6}$
8. 	$\bar{y} = \frac{d^2}{b+2d}$	$S = \frac{2bd + d^2}{3}$ $I_p = \frac{b^3 + 8d^3}{12} - \frac{d^4}{b+2d}$
9. 		$S = bd + \frac{d^2}{3}$ $I_p = \frac{b^3 + 3bd^2 + d^3}{6}$
10. 	$S = \pi r^2$	$I_p = 2\pi r^3$